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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/757,027	01/13/2004	X. Steve Yao	12361-024001	3266

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P.O. BOX 1022  
MINNEAPOLIS, MN 55440-1022

EXAMINER
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NGUYEN, SANG H

ART UNIT	PAPER NUMBER
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2877

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	01/18/2007	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/757,027	YAO, X. STEVE	
	<b>Examiner</b>	<b>Art Unit</b>	
	Sang Nguyen	2877	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 01 November 2006.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 2-4, 6-7, and 10-12 is/are allowed.
- 6) ☒ Claim(s) 1, 5 and 9 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                     | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date: _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)          | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date: _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### ***Response to Amendment***

Applicant's response to amendment filed on 11/01/06 has been entered. It is noted that the application contains claims 1-12 by the amendment on 11/01/06.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

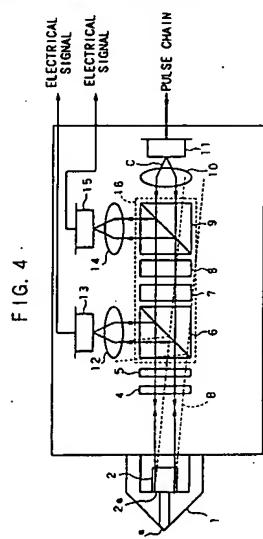
**Claims 1, 5, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ito et al (u.s. Patent No. 6,166,845) in view of Wetherell (U.S. Patent No. 4,723,315).**

**Regarding claims 1 and 9;** Ito et al discloses a method and device comprising:  
an optical path (C of figure 4 and col.1 lines 60-63 and col.4 lines 45-49) through which light propagates ( i.e., pulse chain in figure 4);

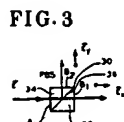
a first partial polarization beam splitter (9 of figure 1) in said optical path (C of figure 4) to split by reflection a fraction of the light in one (figure 4, for example, a PBS [9 of figure 1] to a photodiode [15 of figure 4] ) from an input beam of a laser (11 of figure 4) to produce a first monitor beam (figure 4);

a second partial polarization beam splitter (6 of figure 4) in said optical path (C of figure 4) to split by reflection a fraction of said light in said one (figure 4, for example, a PBS [9 of figure 1] to a photodiode [15 of figure 4]) from said input beam (11 of figure 4) to produce a second monitor beam (figure 4), wherein said first and second partial polarization beam splitters (9, 6 of figure 4) are oriented to have their polarization axes to be 90 degrees with each other (figures 1-4); and

first and second optical detectors (15, 13 of figure 4) is coupled to an EOS oscilloscope (col. 2 lines 1-60) for converting said first and said second monitor beams into first and second detector signals (i.e., electrical signals from photodiodes [15, 13 of figure 4]). See figures 1-4.



F1G. 4.



**FIG. 3**

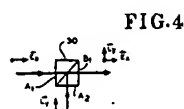
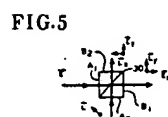
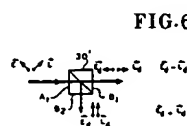


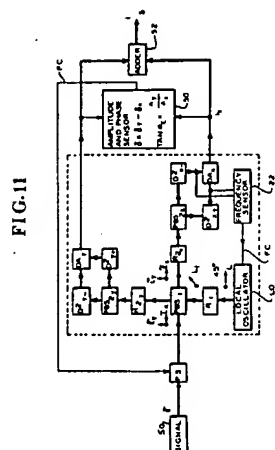
FIG.4



**FIG.5**



**FIG.6**



**FIG. 11**

Ito et al discloses all of features of claimed invention except for polarization beam splitter for splitting reflection a fraction of the light in the one of the first and second mutually orthogonal polarization directions from the input beam and a circuit for receiving said first and said second detector signals and for producing a difference

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between said first and said second detector signals to indicate an amount and a direction of a deviation in a polarization of said light from a known direction. However, Wetherell teaches that it is known in the art to provide an input polarization beam (E of figure 3) of a laser (SO of figure 11) to a polarization beam splitter (30 of figure 3) for splitting reflecting a fraction of the light in one ( $E_y$  component of figure 3) of first and second mutually orthogonal polarization directions ( $E_x$  component is perpendicular  $E_y$  component and col.1 lines 5-55 and col.5 lines 30-50), and a circuit (i.e., DA differential amplifier and a DL delay line, and an adder [52 of figure 11] or switch [42 of figure 9]) for receiving said first and said second detector signals ( $D2_y$ ,  $D2_x$  of figure 11) and for producing a difference between said first and said second detector signals to indicate an amount and a direction of a deviation in a polarization of said light from a known direction (col.7 line 5 to col.8 line 68) figures 1-1-16.

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to combine method and device of Ito et al with polarization beam splitter for splitting reflection a fraction of the light in the one of the first and second mutually orthogonal polarization directions from the input beam and a circuit for receiving said first and said second detector signals and for producing a difference between said first and said second detector signals to indicate an amount and a direction of a deviation in a polarization of said light from a known direction as taught by Wetherell for the purpose of eliminating or reducing signal losses in the optics associated with the polarization state of the signal and manipulating the polarization state to maximize the efficiency of differential heterodyne and homodyne detection.

**Regarding claim 5;** Ito et al discloses all of features of claimed invention except for controlling polarization of said input light according to said difference by controlling a polarization controller disposed in said input beam. However, Wetherell teaches that it is known in the art to provide controlling polarization of said input light (PS of figure 11) according to said difference by controlling a polarization controller (i.e., electronic sensor 50 of figure 11) disposed in said input beam. It would have been obvious to one having ordinary skill in the art at the time the invention was made to combine method and device of Ito et al with controlling polarization of said input light according to said difference by controlling a polarization controller disposed in said input beam as taught by Wetherell for the purpose of reducing or eliminating the sensitivity to polarization.

***Allowable Subject Matter***

The following is a statement of reasons for the indication of allowable subject matter:

Claims 2-4, 6-8 and 10-12 are allowed over the prior art of the record for the reasons set forth in the previous Office action on 06/09/06 with pages 5-6.

***Response to Arguments***

Applicant's arguments filed 11/01/06 have been fully considered but they are not persuasive. Applicant argued, in pages 10-11, that Ito et al does not teach or suggest "a first partial polarization beam splitter to split by reflection a fraction of light in one of first and second mutually orthogonal polarization directions from an input beam to produce a first monitor beam; using a second partial polarization beam splitter to split by reflection a fraction of said light in said one of said first and second mutually orthogonal

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polarization directions from said input beam to produce a second monitor beam" as recited in claims 1 and 9; and Ito et al and Wetherell does not teach or suggest "said first and second partial polarization beam splitters are oriented to have their polarization axes to be 90 degrees with each other" and "a difference between said first and said second detector signals to indicate an amount and a direction of a deviation in a polarization of said light from a known direction" as recited in claims 1 and 9. Also, Applicant argued, in pages 12-13, that "to establish a prima facie case of obviousness under 35 USC 103 (a), there must be some suggestion or motivation, either in the reference themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. The Office action fails to provide any showings in this regard".

This argument is not persuasive.

In response to applicant's arguments, that Ito et al does not teach or suggest "a first partial polarization beam splitter to split by reflection a fraction of light in one of first and second mutually orthogonal polarization directions from an input beam to produce a first monitor beam; using a second partial polarization beam splitter to split by reflection a fraction of said light in said one of said first and second mutually orthogonal polarization directions from said input beam to produce a second monitor beam" as recited in claims 1 and 9. As stated above Office action, Ito et al discloses the claimed invention as indicated at figure 4 that a laser (11 of figure 4) for transmitting an input beam (figure 4) to first PBS (9 of figure 4) in the optical path (C of figure 4), wherein the first PBS (9 of figure 4) for splitting two beams (one reflecting beam to a photodiode [15



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of figure 4] and other transmitted beam to second PBS [6 of figure 4]) front the input beam to produce a first monitor beam (i.e., a first electrical signal), and second polarization beam splitter (6 of figure 2) for splitting two beams (one reflecting beam to a photodiode [13 of figure 4] and other transmitted beam to electro-optic element [2 of figure 4]) of the transmitted of the input beam to produce a second monitor beam (i.e., a second electrical signal) and said first and second partial polarization beam splitters (9, 6 of figure 4) are oriented to have their polarization axes to be 90 degrees with each other (figures 1-4). Also, Ito et al discloses all of features of claimed invention except for polarization beam splitter for splitting reflection a fraction of the light in the one of the first and second mutually orthogonal polarization directions from the input beam. However, Wetherell teaches that it is known in the art to provide an input polarization beam (E of figure 3) of a laser (SO of figure 11) to a polarization beam splitter (30 of figure 3) for splitting reflecting a fraction of the light in one (Ey component of figure 3) of first and second mutually orthogonal polarization directions (Ex component is perpendicular Ey component and co1.1 lines 5-55 and co1.5 lines 30-50).

In response to applicant's arguments, that Ito et al does not teach or suggest Ito et al and Wetherell does not teach or suggest "a difference between said first and said second detector signals to indicate an amount and a direction of a deviation in a polarization of said light from a known direction" as recited in claims 1 and 9. As stated above Office action, Ito et al discloses the claimed invention as indicated at figure 4 and except for a difference between said first and said second detector signals to indicate an amount and a direction of a deviation in a polarization of said light from a known

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direction, However, Wetherell teaches that it is known in the art to provide a circuit (i.e., DA differential amplifier and a DL delay line, and an adder [52 of figure 11] or switch [42 of figure 9]) for receiving said first and said second detector signals (D2y, D2x of figure 11) and for producing a difference between said first and said second detector signals to indicate an amount and a direction of a deviation in a polarization of said light from a known direction (co1.7 line 5 to co1.8 line 68) figures 1-16. Thus, the references are considered in combination, the recitation of the claims would have been obvious suggested.

In response to applicant's argument that the examiner's conclusion of obviousness is based upon improper hindsight reasoning, it must be recognized that any judgment on obviousness is in a sense necessarily a reconstruction based upon hindsight reasoning. But so long as it takes into account only knowledge which was within the level of ordinary skill at the time the claimed invention was made, and does not include knowledge gleaned only from the applicant's disclosure, such a reconstruction is proper. See *In re McLaughlin*, 443 F.2d 1392, 170 USPQ 209 (CCPA 1971).

In response to applicant's argument that there is no suggestion to combine the references, the examiner recognizes that obviousness can only be established by combining or modifying the teachings of the prior art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either in the references themselves or in the knowledge generally available to one of ordinary skill in the art. See *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988) and *In re*

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*Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992). In this case, both of Ito et al and Wetherell references have the same the purpose of teaching measuring signal of the polarization of the input light beam, e.g., wherein Ito et al reference teaches using electro-optic probe for measuring light by the state polarization of the input light pulse and Wetherell reference discloses polarization matching mixer measured the polarization signal of the incoming light to PBSs (polarization beam splitters for reducing sensitivity to the polarization of the incoming signal. Thus, the references are considered in combination, the recitation of the claims would have been obvious suggested.

For the reasons set forth above the arguments, it is believed that the rejection of the claims 1, 5, and 9 under 35 U.S.C 103 (a) is proper.

### ***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Han et al (7043122) discloses PMD compensator based on separation of principal state of polarization control; Core (6782211) discloses cross polarization interface canceler; Akatsu et al (5675415) discloses physical quantity measurement apparatus, Morimoto (5502708) discloses optical scanning device; Kondo (4958929) discloses optical fiber sensor; Kondo (4902888) discloses optical fiber sensor; or Carlsen et al (4685773) discloses birefringent optical multiplexer with flattened bandpass.

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sang Nguyen whose telephone number is (571) 272-2425. The examiner can normally be reached on 9:30 am to 7:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Gregory J. Toatley, Jr. can be reached on (571) 272-2800 ext. 77. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

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USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

January 5, 2006

  
**Sang Nguyen**  
**Patent Examiner**  
**Art Unit 2877**